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AMERICAN RAILROAD JOURNAL.

NEW-YORK, FEBRUARY 22, 1838.

REPORT ON THE SURVEY OF THE VALLEY RAILROAD.

(Continued from p. 619.)

Description of the Line of Survey.

Commencing at the boundary of Massachusetts and Vermont, fifty rods west of Connecticut river, and at an elevation of 81 feet above low water, our line rests upon the surface of the first table for four miles and a quarter, when we reach the village of Vernon. In this distance several deep ravines must be encountered. At Vernon village the line deviates, first westward, and in passing the village, again eastward—copying the sudden winding of the Connecticut, at this place. After running upon the steep declivities and across the low grounds just north of Vernon, we ascend again upon the first table, and pass just west of the dwelling of the late Governor Hunt. As this table fails us, one mile and a half farther north, we are obliged afterward to descend, along the side slope which bounds the table, down upon the low grounds adjoining the river; and upon this low level our line is arranged quite to the town of Brattleboro'. In the distance thus far reviewed, two large streams will require bridges—the Salmon brook at Vernon, and Broad brook nearly two miles and a half south of Brattleboro'.

At Brattleboro', the construction will be expensive. Here the line, after crossing on a level the street leading to Brattleboro' bridge, at a point westward, a few rods of the bridge, passes the mouth of Whetstone brook, with an elevation of 25 feet above its bed; and, for 600 feet, continues in the deep water of the river, although out of its current. Here will be an embankment of 30 feet high, protected on the outer slope by a crating of stone and loose rocks brought from the opposite mountain. The projecting sandy point, north of the cove, occasions a deep cut, which will furnish ample material for our embankment. About one mile north of the village, our line will cross the mouth of West river by a single span of 150 feet.

Through the towns of Dummerston and Putney, we keep every where near to the river—sometimes upon the narrow flats, and sometimes upon the steep hill-slopes. Besides crossing a second "Salmon brook," and other small streams, the Canoe brook, which occurs in Dummerston at the bend of the river, presents in its north bank a formidable sliding hill of clay; and, still north of that, our railroad will require protection against the current and the floating ice and drift-wood of the river. Through both these towns, but especially through Putney, the abrupt character of the river-banks compels us to follow all the windings of the stream, and often with curves of a small radius—in one instance, of 550 feet. At the sudden bend, one mile and a half south of Westmoreland bridge, we are compelled to cross the projecting high table with a deep cut; and again, immediately north of the table, to cross extensive low grounds with a high embankment. In these towns four considerable brooks must be crossed, viz: Salmon, Canoe, and two Underwood brooks, so called.

Through Westminster we meet a succession of side hill and of meadow, with an absence of high table land. Just as we approach the borders of this town, the extensive Putney Flats give an opportunity for a straight line one mile long, and very cheaply made. This is soon followed, however, for a considerable distance (one half mile) by sliding banks of clay; after which we enter upon the flats south of Westminster. In passing this last named place, we are compelled to make around at the foot of the high table upon which the settlement is situated, and which not only rises abruptly before us, but also falls off again suddenly upon the flats to the north of the town.

At Bellows Falls, in the south part of the town of Rockingham, the land rises rapidly by an amount equal to the fall of the stream—or between 50 and 60 feet. Between the North Westmister Flats, however, and this place, there is interposed, very favorably, a succession of tables, into the surfaces of which we are able successively to ascend, and to conduct the railroad into the village, with an inclination of no more than 45 feet to the mile. Even this, however, is a higher inclination than any which must necessarily have place south of that village; or, I may add, north of it, as far as Fairlee. The crossing of Saxton's river, south of the village, and just south also of the town line, cannot be effected without a bridge elevated 50 feet above the stream; consisting, however, of no more than a single span, and estimated accordingly, at $5,200. Through the village of Bellows Falls, two lines were tried—one on the plain behind the main village, and the other upon the river bank and along the main street. The former line is the more direct of the two; but the latter is the least expensive. Two lines were also run at the mouth of Williams river, in the same town—one crossing the stream considerably above its mouth; then crossing the flats in a direct line, and ascending upon the table land beyond with a deep cut;—the other crossing the river at its mouth, and maintaining a course upon the alluvial swell immediately adjoining the river. My estimate has been based upon the latter line, as involving the least expense, by reason of its avoiding both the low flats, which are, at times, deeply flooded, and the high table beyond, with its necessarily deep cut. The bridge at Williams river has been estimated upon the idea of one span of 100 feet—the road-way to be elevated 25 feet above the bed of the stream.

It would be superfluous to detail with minuteness the arrangement of our line through the towns of Springfield and Weathersfield. The bridge over Black river in the first named town, will consist of two spans of 100 feet each—the roadway being elevated 25 feet above the bed of the channel. In Weathersfield, the circuit of the river which forms what is called "the Bow," was avoided by ascending upon the first table above the flats and continuing across, in a line nearly direct, and at a long distance

from the river. Between the residence of Consul Jarvis and the Claremont bridge, we find some ground broken by ravines, and must lay the line upon the side hill. The hill-slopes, however, are not sliding.

Through the township of Windsor, the ground was generally favorable. Our line, in passing the village, was run upon the meadows to the east of it. In less than two miles north of this, we encounter the sliding sand banks called "the Hour Glass." Opposite these, the railroad, for eighty rods, must be constructed by an embankment in the edge of the river, protected by a slope wall through the entire distance.

One mile and a half still farther north, in the town of Hartland, just south of Sumner's bridge, a difficulty of some magnitude must be encountered. At this place, Hart's island divides the stream into two courses. The current upon the Vermont side, as it comes down past Sumner's bridge, turns abruptly west; while at the same spot, the table land which forms the river bank, projects out towards the east, with a corresponding bend, and interposes its bulk directly in the way of a line coming up along the bluffs of the river bank, opposite Hart's island. This projecting table is too high to be passable, except at the expense of an enormous cut. On the other hand, by crossing the Vermont channel on to the south end of the island—then continuing upon the island and recrossing at its north end, we may gain by a very gentle curve the steep bank of the river at the Vermont end of Sumner's bridge. This mode of meeting the difficulty was preferred without hesitation, although it requires two bridges of long spans in crossing to the island and recrossing to the Vermont bank.

Through the remaining part of the town of Hartland, as well as the towns of Hartford, Norwich and Thetford, there is little to distinguish the character of the route; which proceeds in turn upon flats and side slopes, and, in Hartford, often upon rocky bluffs. Three considerable streams occur in that distance—the Queeche, the White and the Ompompanoosuc rivers, besides smaller streams, as for instance, Blood and Broad brooks. In the middle of the town last named, opposite Johnson's island, there will be required an amount of rock excavation unusual upon this line; and, at one projecting point still north of that island, a short distance (400 feet) will present a rock cut of 25 feet in depth. Above Hanover bridge, the route becomes more level; although possessing the general features already mentioned.

After entering Fairlee and crossing the brook that comes from Fairlee pond, we ascend the Fairlee plain and soon reach Sawyer's mountain. This may be passed without embarrassment above the road, upon the loose rock at the mountain base. We now leave the river, which bears off to the east, and follow up the plain—keeping near the travelled road; and having between us and the river the isolated mountain which occasions the bend until we strike again the stream, one-third of a mile north of the line between Fairlee and Bradford. In passing Bradford, we leave the village one half mile to the west; and, crossing Wait's river near the mouth, by a span of 150 feet, we find for the most part, a flat and favorable base for our road, interrupted only by a single bluff of rocks about one mile and a half north of Wait's river.

In approaching the town of Newbury, an attempt was made to shun the low meadows in its vicinity, by commencing a grade at Col. Chamberlain's, near the Haverhill bridge, and gaining the table land on which Newbury is situated. After this we could, it was thought, by running back of the village and along the mountain slope, descend upon the "Cow meadow," which puts in behind the village. But the table land was found elevated to 91 feet above the river; and the mountain slope is, besides, exceedingly steep and rocky, so that this attempt was abandoned. We therefore continued awhile upon the meadows, which are, in general, sufficiently elevated without high embanking; but which are notwithstanding, in certain parts overflowed ten feet deep, and for short distances, fifteen feet deep, by the freshets. Our grade, however, is every where so arranged as to be above the highest water; and heavy embankments may be avoided by the employment of trestles. Immediately upon passing the village, and just south of Mr. Hazleton's house, we cut through the ridge upon which the road now runs, and thus come upon the flat surface of the "Cow meadow." Two miles north of the village, the rock which is known as "Ingalls' Point," juts out abruptly into the river, with a deep cove above it. I have here arranged the line with a view to pass directly through the rock by a tunnel 338 feet long The tunnel, at its north extremity, will leave the hill at a point west of the road. After this we shall occupy the present road for 24 rods, and, on leaving that, take the meadow.

Near the boundary between this town and Ryegate, occurs a difficulty as serious as any we have hitherto met. The spot at which it occurs, lies in the south part of Ryegate, and is called "the Narrows." Here the river bank is high and rocky, and too much indented by bays and windings, to permit a passage along the shore. At the same time the table which constitutes the shore, is elevated to the height of 140 feet. The travelled road now passes through this table in a gulley made by waters that fall into the Wells' river; but although this gully may be made, in part, available for the bed of our proposed improvement, it is, for the most part, too circuitous to be thus used. Unless, therefore, we cross the river, (which is of doubtful expediency) it will be necessary, for a distance of 20 rods, to cut 80 feet deep, besides other deep cutting—or (what is more expedient) to tunnel underneath the table for 475 feet. Upon the idea of this tunnel I have based my estimate at this locality, which it will be seen hereafter, amounts to $26,000.

Excepting for a moderate distance, where the bank is steep, and, in part, sliding, and where a slope piling must be resorted to in the manner already mentioned, no farther difficulty was experienced up to Dodge's Falls in Ryegate. Here it becomes necessary to rise rapidly in order to gain the level and high table land to the west, for the purpose both of avoiding the circuit of the river and of shunning McIndoe's Falls in Barnet, which it is impossible to pass with a lower level, if continuing upon the Vermont side. A grade of 53 feet to the mile, ascending for 200 rods, enables us to command this plain; and, after passing McIndoe's Falls, we are able to descend again upon the low grounds beyond, with a short, similar grade. In passing Baird's Falls, south of Steven's Village, the rocky hill at that place will occasion only a moderate expense; after which we may keep upon ground generally level, nearly to the entrance of the Passumpsic valley.

At the mouth of the Passumpsic, the western bank, both of that river and of the Connecticut, are irregular, precipitous and rocky. It will be necessary, in passing one of the projecting cliffs, to use a curve of the smallest radius I have admitted any where upon the route—that is of 550 feet. But after having left the Connecticut and arrived in the Passumpsic valley, the character of our line experiences some changes, when compared with that in the other valley. We no longer meet with the high tables, presenting steep side slopes, and crowding the railroad into the stream; nor do we, at least above McLeran's dam, encounter, except in a single instance, (that of Lyndon Falls) any high mountain ledges. We are more generally upon the river flats, or upon ground either moderately sloping, or of no great elevation above the stream. On the other hand, however, we are compelled to resort to frequent crossings of the stream; and our line in this, as it had been in the Connecticut valley, is winding, and sometimes with curves of a small radius. Between McLeran's dam and St. Johnsbury village, our line was laid across the stream six times. Between the place last mentioned and Trull's mills, eighteen miles above, there are also four crossings of the main Passumpsic, and seven crossings of its branches. In this distance there occurs no extraordinary difficulty. The Lyndon Falls, which, in a distance of two miles—that is, from above Cahoon's to the foot of Allen's dam—descend 101 feet, can be surmounted without a remarkable expense, by using

a timber construction, with occasional walls, and by a grade of 50 feet to the mile.

We have now advanced our line up to Trull's mills in the town of Burke; whence, as was formerly mentioned, it deviates westward in its course to Barton. From Trull's mills to the summit, is nearly six miles and a half; and the elevation of the summit is 1043 feet above low water in the Connecticut, at the south line of the State, and about 1215 feet above the mean level of the ocean. In approaching the summit, and also after having passed it, I have arranged the grade at 80 feet to the mile for nearly three miles in all. These grades, however, I am satisfied, upon reflection, might be moderated, in the actual location, and perhaps reduced to 66 feet to the mile. The reduction must be expected to involve additional expense. In approaching the summit, a cut will also be made that will drain the shallow waters of the Savanna Pond. Our line continues northward from the summit—sometimes in the valley and sometimes on the mountain slope—to the village of Barton, where the outlet of Bellwater Pond was crossed, to gain the east slope of the Barton river valley. In the descent from the summit to Barton village, although rough ground is found occasionally, no prominent obstacle will be encountered.

It has been mentioned in a former part of this report, that our line turns northeast from Barton towards Brownington and Charleston. In following this course, it becomes necessary to ascend at first with a gentle inclination, for one and a half miles, and afterwards, for more than a mile, with an inclination of 75 feet—as at present arranged—to gain the height of 122 feet above Barton village, at a point nearly one half mile northeast from Mr. Jonathan Robinson's house. After this, no considerable inclination occurs for twelves miles, to Charleston. By taking this course, we avoid the broken slope of the Barton river valley, and come upon favorable ground. It is not necessary to enter into any details respecting the line from Robinson's house to Pensioner's pond in Charleston. The only point worthy of special notice is the crossing of the Willoughby river. This rapid stream, running between high banks, will be spanned by a bridge 66 feet high above the stream, and consisting of two reaches—each 165 feet long. Soon after this, our line finds a very even surface to rest upon in the Brownington and Charleston swamp.

The slope of the hollow, west of Charleston, upon which we commence descending towards the Clyde river and the Salem pond, is exceedingly broken and channelled by ravines and irregular gravel ridges; but after striking the valley of the Clyde, no impediment occurs till we reach Lunge brook in the town of Salem, where there is a broad valley to be crossed with an embankment; or, more economically, by a trestle work. The descent from Pensioner's pond to the outlet of Salem pond is disposed in easy grades—excepting one of 59 feet for two and a half miles from the causeway at the head of the Charleston hollow. But before passing Dodge's hill in Derby, and for one mile and a half before reaching John's brook, the country descends with great rapidity. The fall to Beebe Plain is disposed with difficulty even into grades of 55 and 69 feet, extending together one mile and a half. In crossing on to this Plain, a tributary of the John's brook, interposes a broad gulf, 70 feet below our grade at the deepest; which I propose to cross by means of a trestle bridge, bearing upon their walls, which cannot settle, raised to a certain height above the bottom of the gulf, and secured by being embedded in an embankment.

It has been already mentioned that the line meets the Canada boundary upon this plain; and that the plain forms the height of land between waters running in opposite directions; from which height there has been found by actual reconnoisance an easy route to the St. Francis lake, or, if preferred, to the city of Montreal.

Thus I have attempted a description of our surveyed line as particular as these limits allow, and sufficiently full, I trust, to have embodied the prominent features of the route and all its points of principal interest or difficulty. For more detailed information concerning the expense of the whole line, or of distinct portions of the line, as well as concerning the curvatures, grades and other circumstances pertaining to the route, I refer to the parts of this report which yet remain.

General Observations.

The entire length of the route from Massachusetts to Canada is found to be 191 83–100 miles. Its general character, so far as relates to the formation of the ground, is expensive; but this is counterbalanced by other natural advantages,—so that the entire line (as the estimate will show) may be made at a moderate expense by the mile. In respect of directness, the line embraces a large portion of curved lines. The curvatures are generally moderate. It will be seen, in the table given below, that a small portion—two miles only, in all—is arranged in curves turned upon a radius less than 750 feet, and from that to 550 feet, which is our smallest radius. In respect of inclination the parts below St. Johnsbury are more favorable than the parts above. From Well's river down to the south line of the State, grades of 45 and 50 feet occur in two instances only; once at Bellows Falls, and once, south of Fairlee plain. Between Wells' river and St. Johnsbury, grades of a trifle more than 50 feet have been resorted to in several instances. Above St. Johnsbury grades still more inclined occur at certain places. The table of grades given below exhibits the arrangements of the line upon which my estimate is founded. I do not consider that table a fair exhibition of the best possible arrangement upon the ground as it lies; because I am confident that more extended examination would develope lines superior, in this respect to my own lines, although probably more expensive. It may fairly be considered, however, that the ground above St. Johnbury will not admit of a location embracing no grades as high as 66 feet to the mile. The table, however, as it stands, does not include any grade that is inadmissible in practice—although higher for short distances than would be esteemed perfectly free from inconvenience. The two tables that follow will explain their own object.

TABLE I,

Showing the aggregate length of grades as arranged for the estimate.

Inclination, ft. per. mile.	Miles ascending north.	M's. descending north.	Total miles.
Level.	:::::::::	:::::::::	80,98
0 to 10	5,59	1,50	7,09
10 " 20	9,79	3,19	12,98
20 " 30	20,10	14,59	34,69
30 " 40	16,31	10,95	27,26
40 " 50	3,45	1,95	5,40
50 " 60	7,65	7,61	15,26
60 " 70	1,72	2,17	3,89
70 " 80*	2,74	1,54	4,28
* May probably be reduced.		Total	191,83

TABLE II.

Showing the aggregate of different curves.

550 feet radius.	0,30 miles.
600 " "	0,90 "
650 " "	0,58 "
700 " "	0,28 "
750 " "	2,83 "
800 to 900	4,17 "
900 to 1000	3,77 "
above 1000 and straight lines.	179,00 "
Total	191,83 "

Before entering upon the subject of the actual expense of the contemplated improvement, it is necessary to state the exact plan with reference to which the calculations have been made. This being done, it will be possible for such as are versed in subjects of this kind to form their own judgment respecting the expense of the construction made upon any plan different from the particular one which has been made the basis of these calculations.

I remark, therefore, that I have adopted the contemplated plan of improvement to the condition of the valley which is to be benefitted by it. This is a widely extended and fertile region, abounding in water power and the means of abundant produce,—but now ill supplied with communication to market. The great point to be aimed at is to open an outlet to the sea-board, as well as one susceptible also of being extended by the inhabitants.

of Canada to the St. Lawrence, and, if desired, to Montreal. For this purpose it is not essential to adopt a very expensive plan of improvement. On the contrary, as the character of a considerable part of the country interested is new, it is obviously essential that we avail ourselves of the natural advantages of such a region, so as to make the best use of the materials to be procured on the spot. I have therefore aimed specifically at two things: In the first place, to make the plan *substantial* in its character, and sufficiently durable to subsist in its first form for a period of years—say eight or ten years,—after which the perishable parts may be renewed or changed at pleasure. In the second place, I have aimed at the very cheapest plan consistent with such an object. The following distinct specifications will give a complete view of the manner in which I propose to accomplish and unite these objects.

First: I propose a single track, both for grading and superstructure. The embankment surface is to be fourteen feet wide on the top, and the excavations eighteen feet wide on the bottom,—a width sufficient to give space for drainage at the sides. It is contemplated to construct at certain distances—say at each fifteen miles—portions of a double track, half a mile in length, with turnouts at each end. By such a duplication of the track, at particular locations, the capacity of a single railway for transportation may be enlarged at a moderate cost. This of course should be done at places where the grading would be easiest. Other mere passing places are to be supplied at suitable intervals.

Second: I have contemplated, not only for the superstructure and the smaller bridges, but in other ways, a free use of the timber which is abundant along the track,—such as chestnut, pine, tamarac, spruce and cedar, and in certain situations, hemlock. Thus in running along the steep side slopes of the lofty tables which it is impossible to excavate in the least without caving down an enormous mass of sand and growing timber, I would contemplate the plan of sinking piles eight feet into the solid earth, to project several feet above the surface, and there to be crossed and bound together, and secured from springing by a long timber to be embedded and secured in the hill slope above. In the same manner I would pass the sliding hills—lifting our track so far above the surface that the slips may pass underneath, and thus only embed the piles deeper and deeper. The small ravines are generally to be embanked; but sometimes are to be crossed by a firm trestle work deeply embedded in embankments at the foot. Low meadows also are to be crossed by similar trestles five feet apart; embedded, first, two feet in the solid earth, and then embanked from three to eight feet in addition, according to the elevation of the roadway. In like manner, deeper ravines may be crossed, by embanking with sand or gravel to a certain moderate height—then leaving the bank to settle nearly solid, and erecting trestles raised purposely too high; after which by filling, from above, a few feetadditional,the settling and embedding may be completed, and the trestles finally adjusted to the grade. In two instances I have supposed deep gulfs to be crossed by a simple bridge work, supported upon trestles, thirty feet apart, braced in every direction, and resting upon thin and rough but substantial walls of dry masonry, raised to a moderate height and embedded in embankment. The use of trestle work is well adapted to a winter road—especially in a climate so far north as the upper parts of Vermont, in consequence of its projecting above the deep snows; and, inasmuch as cedar is very abundant in the northern quarter, work of that kind may there be made very durable. It is obvious that such a road is to be worked by engines alone without the employment of horses, it being destitute of a horse path.

Third: I propose, upon the embankments and in the excavated portions, a wooden superstructure of the common kind—that is, with a wood rail and a flat iron bar spiked upon it. In the case of trestle work and slope piling, it is obvious that an important part of the structure—all the bearing parts—will have been already supplied, and that little will remain but to adjust and secure the rail. This may be made of spruce, tamarac, or chestnut. The usual cost of a superstructure upon this plan is about $4000; but, taking into view all the circumstances, I have found a safe estimate for this road to be $3,250.

We omit the details of the estimate and give the sum total.—Ed. R. R. J.

Total cost of grading the Railroad; being 191 83-100 miles at $6,022 63,	$1,155,319 84
Flat rail superstructure at $3,250,	623,447 50
Additional track at each 15 miles, to be graded and laid, in all 6½ miles at $9,272 63,	60,272 10
Turnouts,	20,000 00
Depots, Engine and Carriage Houses, Shops, and watering stations,	50,000 00
Engines, Passenger and Burden Carriages,	185,000 00
Engineering and Superintendents,	100,000 00
Contingencies,	90,960 56
Total cost of improvement,	$2,285,00 000

General Remarks.

The estimate presented above, shows an average expense of the improvement, when finished and completely furnished for action, of a fraction less than $12,000 a mile. This sum,—while I give it as abundantly competent to meet the cost of the contemplated work,—is, itself, moderate, when compared, either with the known expense of other great routes, or with the magnitude of the object which this is designed to effect. With regard to the resources of this railroad, as a means of profitable income, they are already, in a measure, before the public in the Report of the convention holden at Windsor, in January 1836; and there is neither occasion nor opportunity for me here to do more than allude to that document. Neither can I dwell upon the inducements offered by the scenery of the Connecticut and its valley, and of the fine mountains and lakes of northern Vermont, to invite northern travellers to a choice of this line of passage. One consideration alone, of a public nature, and of pressing importance, I may be allowed to introduce. It is this.—The limited territory of the New England States has not hitherto withholden the amount and the moral force of their population from sustaining a weight in the national confederation disproportionate, indeed, to their extent of domain, but—for that very reason—of vital importance to the secure condition of their public interests. But the time is at hand when New England may be forced to struggle against the prospect of being overgrown by those immense new states, to some of which she has furnished largely both the population and the institutions. The very greatness of those states inspirits them to make the most of their natural advantages. But, with regard to ourselves, nothing can hold up these individual states of New England from sinking into an insignificance proportioned to the diminutiveness of their territory, but the policy of nurturing the amount and the moral force of their people, not merely by institutions of intellectual and moral excellence, but by opening, every where, the great channels of intercommunication, as the first step to the effectual promotion of industry and the arts. The route which I have had the pleasure to survey is one of the most prominent that can fix the attention, as opening to occupation and to enterprise a large region fertile in soil, and eminent for the amount of mechanical power upon its streams. Considered with reference to the foregoing ideas, it is an improvement, to the encouragement of which our citizens may justly feel impelled, not merely by the prospect of immediate profit, but by a principle analagous to that of self-preservation.—All of which is respectfully submitted.

Alex. C. Twining, *Engineer.*

New Haven, Sept. 25th, 1837.

Monroe Railroad and Banking Co.

At an annual meeting of the Stockholders of this Institution, held on the 25th day of January, 1838, the whole of the Stockholders attended, either in per-

son or by proxy, with but very few exceptions. The Company assembled at their banking house, and after an organization of the convention, Gen. L. L. Griffin proceeded to make a few clear, able and pointed prefatory remarks, and then submitted a full, ample, and satisfactory statement of the Bank, together with the report of the Chief Engineer, Mr. Daniel Griffin. He then submitted the books, vouchers, &c., to the inspection of the convention, which gave *general satisfaction* to all who were present—which will more fully appear by the following resolutions which were offered and almost unanimously adopted:

Whereas, at the last Convention of the Stockholders, held on the 21st day of August last, a resolution was passed by the Convention, "that no discount should be made until the discounted paper owned by the bank should be reduced by payment to a less sum than $200,000, and after the discounted paper should be thus reduced, the whole amount of discounts should not be carried beyond the sum of $200,000, until otherwise ordered by the Stockholders in Convention." And whereas that resolution has proved to be inexpedient, and a clog to the prosperity of this Institution, it is therefore Resolved, that said resolution be and the same is hereby repealed. And be it further Resolved, that this Convention approve the order of the Board of Directors rescinding said restraining resolution.

And be it further Resolved, That this Convention approve and approbate the course pursued by the President and Directors of the Institution since the last Convention, in faithfully and vigilantly protecting and promoting the interest of the Company in the Banking department, and facilitating the completion of the road.

After the adoption of these resolutions, the Convention then proceeded to an election of a President and six Directors for the year 1838, which resulted as follows:

Gen. L. L. Griffin,	4164
Henry Solomon,	4164
A. Brooks,	4039
John Martin,	4164
B. T. Obar,	4039
Peter G. Thompson,	4139
Dr. M. Bartlett,	4064

The Convention then adjourned.

ENGINEER'S REPORT.

To the President, Directors, and Stockholders of Monroe Railroad and Banking Company.

Gentlemen—I again appear before you to report the condition and progress of the operative department of the Monroe Railroad, under more auspicious circumstances, than when I last had the honor to address you on this subject. The recommendations I then made being adopted by you and fully carried into effect by the Board of Directors, have attained for your enterprise that state of forwardness which was contemplated by these measures: and I may confidently say, insure its completion by the first of November next, the dangers of the sea to the importation of your iron being alone excepted as the only circumstance involving a doubtful issue.

Being aware that it would be inconvenient to occupy much of your time on the present occasion, I will as concisely as possible notice the leading measures taken since your last convention; and will add a short summary of the disbursements attendant on the progress of the work.

The necessary quantity of iron has been (through my agency,) contracted for in Philadelphia at a cost of about forty thousand dollars, when delivered in Darien. The first cargo has already arrived, on which twelve thousand dollars has been paid. The entire cost when delivered in Macon will be about forty-eight thousand dollars, all charges included.

We have to regret that about three-fourths of this iron is smaller than that originally ordered, being to that iron in the proportion of 10 to 14; but the Direction were left without choice in the matter, there being nothing better to be had on this side of the Atlantic, and any other alternative involved a year's delay, which of course was inadmissable.

Active operations have been resumed on all the unfinished work by the recall of the contractors who had suspended, and by re-letting the vacant sections to efficient persons. I am happy to be able to add, that the abandoned mile within the limits of Macon is included in this letting, the citizens have under more enlarged views of their interest and duty, retracted their former course, in relation to this improvement, and this part of the work now presents a most active scene.

Thirteen miles of the line are prepared for the reception of the superstructure, and five more will be completed by the first of March. The remaining six miles, with the exception of the deep cut through Singier's Hill, will be prepared by the first of June: and arrangements are now on foot to divide the deep cut into two contracts, for the purpose of doubling its force of labour so as to bring it to completion by the first of July at farthest.

Contracts have been made for cross ties and mud sills for nearly all parts of the line where it would be desirable to let out that work—and the steam sawmill, together with the mills of Samuel B. Hunter, Williamson Mims, and Frederick H. Reeves, are actively engaged in sawing railing to be delivered at different points of the line, some will also be prepared with whip saws.

A limited outfit of machinery is now in preparation in Philadelphia, consisting of locomotive engines, two eight wheeled passenger cars, and the iron work of eight wheeled burthen cars, these with turning platforms and other smaller machinery are to be delivered at Darien by the first of June, their cost will be about twenty-five thousand dollars delivered in Macon.

The following summary of expenditures will not form a correct criterion by which to judge of the progress of the work, as some heavy sums including retained per centage will fall due on the first of February and first of March, for work now completed or nearly so, which are not embraced by it, and there are large quantities of material prepared and preparing, on which (by the terms of contract) there will be nothing due under 12 months, neither will it give the actual amount paid out at the bank, paid interest for the accommodation given by the contractors of which I take no account, believing it not properly chargeable to the railway.

The expenditures without interest would stand thus:

Paid on graduation and masonry,	$131,937 41
" Material for superstructure,	16,763 21
" Right of way and expenses of assessment,	4,070 46
" Engineer's services and its contingencies,	12,488 78
Aggregate,	$165,259 66

I have the satisfaction of stating that the cost of the sections already completed, and the prices at which the others are let, are such as to establish full confidence in former estimates, so that I have no hesitation in assuring you that the aggregate cost of the work embraced in these estimates will not exceed that already reported.

In conclusion, I will add that I have no recommendations to offer but that the present designs be steadily pursued to their accomplishment, as I am confident that they lack nothing either of congruity or comprehensiveness requisite for securing the successful achievement of your undertaking.

Respectfully submitted,

DANIEL L. GRIFFIN.

BRICK AND CEMENT BEAMS.

A fresh series of experiments have been trying during the present week at the Royal Engineer establishment, Chatham, by authority from the Board of Ordnance. Three experimental brick beams, each resting on piers of brick, were constructed and broken by weights, which were applied over the centre of each. The piers were 2 feet 6 inches high and 18 inches square. The beams were 10 feet long, of the same width as the piers, and 1 foot thick. No. 1 beam was built of pure cement. No. 2 was also built of pure cement, with the addition of five longitudinal pieces of hoop iron, one of which was in the centre joint, and two others in each of the remaining joints. No. 3 was built with mortar, composed of three parts clean sharp sand, and one part of Halling Lime, and had also hoop iron in the joints. The wood work for supporting Nos. 1 and 2 was

removed in nine days, and that for supporting No 3, in six weeks after they were finished. No. 1 beam was broken down, but it yielded sooner than it was expected; but it proved that for buildings where beams are usually used, it may be safely applied. No 2 also was a satisfactory experiment. No. 3 was tried on Saturday. The object of the experiment was to ascertain the use of cement-bond in the walls of buildings, as a substitute for bond and chain timbers; and also for ascertaining what additional strength is added to the bond by using hoop iron in the joints. Mr Brunel first tried some very interesting experiments, proving the extraordinary strength of brick work, laid in pure cement with hoop iron in the lower joints, but the same thing had not been tried without hoop iron, which led to the experiments under Colonel Pasley.

We have since been favoured with the following correct report of the results of these experiments, by a gentleman who was present on the occasion. The reader will refer to the paragraph in our last number (p. 16) for the description of the construction of each beam.

No. 1 beam was broken on the 27th at 2 P. M., with a weight of 298 lbs.; the break was not in the centre, but extended in two vertical seams, the one about 6 inches, the other 18 from the centre.

The strength was in favour of the cement, for in no direction did it give way; but on the other hand, the bricks were rent with an even fracture.

Another experiment was then made with the largest piece remaining, which measured about 4 feet over the piers: this required a weight of 2356 lbs., and the fracture was similar to the former.

No. 2 beam was tried on the next day, and was found capable of supporting 4723 lbs. but gave way on the addition of 56 lbs. ∴ 4723—498 (weight required without the longitudinal bonds)=4225, the amount of strength gained by the use of iron bonds.

No. 3 gave way with the pressure of between 400 and 500 lbs. There was nothing remarkable in this experiment.

The above experiments were necessarily imperfect, the power not being applied as it would be in practice; for it is evident, that with a wall of from 10 to 15, or even 20 feet of solid work, the pressure, instead of acting merely on the centre, would be diffused throughout the whole beam. Upon clearing away the bricks from the middle of No. 2 beam, the two lower bars were found drawn asunder, the middle one remained of the same length, and the upper pair found, what is called buckled, or folded on themselves, showing the neutral centre to be in the middle bar.

We may take this opportunity to observe, that the foundations of the new Judges' Chambers in Chancery Lane, are being constructed after the manner of the beam No. 2; having a length of hoop iron to every row of bricks, and bedded in Roman cement.

On Monday some further experiments were made by Colonel Pasley at Chatham, in the presence of the heads of the Naval and Military departments there, and many scientific gentlemen, upon the strength of cement. The first experiment was to ascertain whether a safe staircase might be made with artificial stones formed with bricks and tiles, and other small materials united with pure cement, strengthened by hoop iron bond.

A portion of the brick beam used in No. 2 experiment detailed in our last Number, in length 4 feet 4 inches, was inserted 9 inches into the wall of a stable; it consisted of four courses (two more than is used in a geometrical staircase;) the extreme end of this step had no support whatever, so that we had the novel exhibition of a horizontal column of brick, retained together by cement and iron bars. Being loaded, it sustained the weight of 3566 lbs. Beneath the extreme end of the beam was placed a block to break the fall; when the weights were removed, and the block withdrawn, the column remained at the angle at which it fell, and required great purchase to remove it finally from the wall. Not one of the iron bars had given way.

The second experiment was for the purpose of ascertaining the force with which the hoop iron strengthened the brick beams, by weights acting on a piece of hoop in a state of tension. In this case a piece of hoop iron, 12 inches long, similar to that used in the above experiment, sustained a weight of 6163 lbs., then yielded with a fair fracture; it was elongated $\frac{7}{8}$ of an inch, and its temperature sensibly increased.

The third experiment was upon the remaining portion of the brick beam, built with Halling lime mortar, and strengthened with hoop iron, which was broken on the 28th ult., but one end of which was little injured. This beam was placed across two piers two feet asunder, so that the bars had very little room for extension; the experiment, however, was remarkable, for the beam sustained the weight of 4887 lbs. It did not give way suddenly; two bricks fell from the lower course many minutes before the final crash, and this did not occur till it had been yielding with a slow gradual motion. The fall was so tremendous that one of the piers were overturned, and scarcely two bricks were found together. So much for mortar. None of the bars were broken in this experiment.

It appeared in these experiments that the iron was corroded in the mortar, but not in the cement, another security of the latter over the former

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Correspondence of the N. Y. Daily Express.

FROM EGYPT.

Extract of a letter from an American gentleman, now traveling in the East, to a friend in this city, dated

Grand Cairo, Nov. 10, 1837.

You will no doubt be greatly surprised to receive a letter from me dated at this distant part of the globe, but accident more than design is the cause of my being here. On my reaching Malta, I found the communication to Egypt so rapid by the British steamers to Alexandria, that I determined to extend my travels altogether in a different course from that originally intended, and you need not be surprised should my future letters be dated at points unthought of by me and our friends, when I left the United States—I am now entirely undetermined whether I shall proceed by steamboats up the Nile into Nubia, and even into Abyssinia, or go down the Red Sea into India. Cairo is now becoming one of the most important cities in the world. It bids fair under the present enterprising Pacha, to rival its ancient splendor. In former times, when the navigation round the Cape of Good Hope was unknown, the whole commerce between the African shores of the Mediterranean, and Persia, Arabia and India, was carried on by immense caravans, through Cairo to Suez. For many ages past this intercourse has greatly ceased. The present Pacha of Egypt is a man of extraordinary character, and would be deemed such in any country. As an evidence of his energy and liberal spirit, he has offered every facility to the English, to extend through his dominions their line of communication with India. He has a steamboat of his own, called the Egyptian, running from here into Upper Egypt. She arrived here a few days ago from Miniah, full of passengers, a distance of two hundred and fifty miles up the Euphrates.

The route is now so easy compared with what it was a short time since, when, aside from employing guards, travellers were compelled to go on camels and asses, or in small boats—that I may take a steamboat to Nubia and pass on to Thebes. But before I travel north or east, I must say something in relation to this, which has been termed throughout the east, the queen of cities, and has no rival either in Egypt or Arabia. The grand city it is called, in contradistinction to old Cairo, is surrounded by high walls, with magnificent gates. The streets narrow, dark and winding. The principal street traverses and winds through the whole city. No pavements, and the consequence is, that the dust which is raised by the crowds of men from all countries, and camels and asses which pass through them, is most annoying. The houses are from two to three stories high, but being lighted from the courts within, and then walled up on the street, present a dark and prison-like appearance. There are, however, open squares upon which are built some very fine dwellings. The baths, the great places of resort, are tombs of the Mamelukes, are of marble, and being painted with gilded domes, have a most magnificent appearance. The Pacha resides in the citadel, which is said to have splendid apartments. The population is supposed

to be from two to three hundred thousand, but no correct enumeration can be given. There is probably no place on the globe where the population is more transient. Thousands are on the move constantly, to and from Africa into Asia, and from the shores of the Mediterranean into Upper Egypt. I have not had time to attend to the sale of the male and female slaves that are exhibited in the street, of them I shall write to you in my next.

I fortunately reached here just in time to witness a scene of extraordinary gaiety and feasting. It is called the Feast of the Circumcision, and has lasted for the last eight days. On this occasion nearly two thousand children, including the sons of Pachas and men in the highest offices of the government, have been circumcised.—The ceremony, or operation, was performed in the most public manner, and subject to the gaze of the crowd. At the palace, hundreds of camel loads of provisions were cooked for the thousands and thousands that attended. Fireworks of the most brilliant description were set off, and a large amount of money distributed to the crowd. All has been music, dancing, &c.

Should I pass into Upper Egypt, I will endeavour to give you a description of the wonderful ruins of tombs, and temples of ancient times, and of the Pyramids, which are in fact among the greatest wonders of the world. The British steam vessel Atalanta, is running regularly from Suez to Bombay. She stops at a number of places in Arabia, on the shores of the Red Sea, and at Mocha, and passes through the Straits of Babelmandel into the Indian Ocean. This is the new route for travellers, and no doubt will be taken by many English as well as Americans. Yours, &c.

THE RAILROAD.

An ordinance is circulating through the city in pamphlet form, from which we perceive that the City Council of Columbus are taking steps towards the great enterprise of connecting Columbus with the Tennessee Railroad. Books of subscription are to be opened in the several counties concerned on the first Monday in March; subscribers to pledge property by mortgage sufficient to ensure payment; the council is then to issue bonds which are to be sold to the best advantage, the proceeds to be loaned by the city to the company, and the work to commence.

Without pretending to decide upon the merits of the mode, (which by the bye, seems at first view to be the only practicable one in the present deranged state of the money market,) we most heartily rejoice to find our enterprising board moving forward towards this great work. The only thing that can prevent its prosecution is want of zeal. A man with foresight sufficient to transact ordinary business, must at once acknowledge the practicability of the work, and one with half a head must see at a glance its momentous importance to the very existence of Columbus. Is there enterprise enough in our section to undertake it and carry it forward? For the honour of our country we would not question it.

We have before this given our views of the matter. It can do no harm to repeat them. Without the fear of contradiction, we assert that there is no place in Georgia affords half the natural advantages for commerce, as does Columbus. Her location, her relative position and the natural obstructions to passways in a different direction, almost compel the up country trade to come to her wharves—we care not whether it is done by canals or railways, the expense of bringing here the trade of Cherokee, Tennessee, the western part of North Carolina, and all intermediate counties in Georgia, must be one-third less than to take it to any other market; if done by a canal, we would say one-half would do it. Now it is reduced to a certainty, that other sections, with all their disabilities, are seeking this trade—and unless we put in our claim soon they will have it. If then, it is worth their trouble and expense (so much greater than ours,) may we not well afford to take up the project? But it is useless to offer arguments. Those who have examined the subject know we can profitably embark—and as this is perhaps a sufficient motive, we most earnestly hope that all who can do so, will go into the plan with spirit and unanimity. Let every man feel that he is interested, and act accordingly—for every man in and around the route will share the benefits, if it be completed, and none will escape the loss if it fails. If she does not move with energy in the works she may soon bid farewell to her prosperity—and if she will open up her stores by this communication to the rich and immense products of the country alluded to, the man who owns an acre of her soil may be a Nabob.—*Columbus Enquirer.*

LEGISLATIVE PRUSSIAN IMPROVEMENTS.

With the coming year a singular new law will come into operation in Prussia. It is expressly intended for the "restriction of freedom of trade." For the future it will be necessary to procure a licence to set up in business, and this is not to be granted till the applicant has undergone an examination with regard to his qualifications for the trade he has chosen, and shows that he possesses sufficient property to carry it on. The object of the law is said to be to prevent swindling, and the ruin often caused by the hazardous speculations of those who, possessing no property themselves, are indifferent about risking the property of others. The effect of it will obviously be to keep classes where they are, and to bring every one into still stricter subjection than hitherto, to the powers that be.—*London Mechanics' Magazine.*

☞ Volume Six will be completed as speedily as possible. The next, or Volume for 1838, will be published in a more convenient form for preservation.

*** Subscribers who desire to be supplied with missing numbers, will do well to apply for them soon. We shall always take pleasure in furnishing them if we have them to spare.

☞ Particular attention will be given to the procuring of all kinds of Instruments required by Engineers.—Orders must be accompanied with the necessary funds or city acceptances.

For Sale.—A Level, made to order by Brown & Hunt, and in first rate order. Enquire at this office.

Wanted on a Lease.—A good country place, with suitable out-houses, and from 5 to 15 acres of land, a short distance of the city. Enquire at this office.

FRAME BRIDGES AGAIN.

The subscriber will build Frame Bridges in any part of the United States, Maryland not excepted, and will extend them to as long a span, and warrant them to be as strong, durable, and cheap as those made by any other method.

Having no patent right, he requires no agents. A large number of bridges of his construction are to be seen. Young gentlemen, who wish, can be instructed in the true mathematical principles of building bridges, and the application of the same to practice. JOHN JOHNSON.

Burlington, Vt., Jan. 1838. F14tf

NOTICE TO CONTRACTORS.

Sealed proposals will be received by the undersigned, Acting Commissioner of Public Works, for the 5th Judicial Circuit, Illinois, at his office in Canton, Fulton county, on Tuesday, the 17th day of April next, until 4 o'clock, P. M. of that day, for the Grading, Bridging and Masonry of twenty-four miles of the Peoria and Warsaw Railroad; extending from Peoria, on the Illinois river, twelve miles west, and from Warsaw on the Mississippi, twelve miles east.

Sealed proposals will also be received at the Engineer's office, in Quincy, Adams county, Illinois, on Monday the 23d day of April next, until 4 o'clock P. M. of that day, for the grading, bridging and masonry, of the Northern Cross Railroad, extending from Quincy to Columbus.

Plan and profiles, together with specifications of the manner of executing the work, will be exhibited at each office ten days previous to the days of letting. The portions of the above work to be put under contract are expensive, requiring a large amount of heavy excavation and embankment. They will be divided into sections of about one mile in length.

Contractors will be required to make an efficient commencement of their respective jobs, within sixty days after the letting, and to have them fully completed on or before the first day of August, 1839.

Recommendations will be expected in all cases in which the contractor is not personally known to the undersigned, or the associate commissioner attending the letting.

The country is dry, healthy, and well settled; provisions are easily procured, and as the above with the other works recently let, and now offered by the different commissioners of the State to be let next spring, are the commencement of the extensive system of Internal Improvements projected by the State of Illinois, it is worthy of the attention of contractors abroad. J. WRIGHT,

Acting Commissioner, 5th Judicial Circuit, Canton, Illinois, Jan. 9, 1838.

AGENCY.

The Subscriber offers his services as Agent, to procure *Machinery for Mills, Steam Engines, Locomotives, Printing Machines, Presses, Types and Fixtures.*

He will give prompt attention to all orders entrusted to him for execution; and pledges himself to those who may employ him, that no effort on his part shall be wanting to procure the best articles to be had in the city—and to give satisfaction.

He will also employ Millwrights and Engineers, to erect Mills, and put the Engines and Machinery in operation.

Orders accompanied with the necessary funds, or satisfactory city acceptances, should be addressed to D. K. MINOR, 30 Wall-st. N.Y.

LOUISVILLE, CINCINNATTI, AND CHARLESTON RAILROAD.

NOTICE TO CONTRACTORS.—Sealed Proposals will be received at the Office of the Company in Columbia, S. C., until the 15th day of February next, for the graduation and masonry of that portion of the Road from Columbia to the crossing of the Congaree River, in the vicinity of McCord's Ferry, being 25 miles in extent.

Also, for the construction of a Bridge of 400 feet in length, on the Congaree River, to be built on stone piers and abutments, for which there are suitable quarries in the neighborhood.

The plans and profiles of the line will be ready for inspection at the Office of the Resident Engineer, in Columbia, S. C., after the 10th day of February.

So soon as the surveys for location, now in progress, are completed, that part of the Road extending from McCord's Ferry to the Charleston and Hamburg Railroad, at Branchville, will be put under contract, of which due notice will be given.

WM. GIBBS Mc NEILL,
Chief Engineer.

☞ The Railroad Journal, N. Y. Courier & Enquirer, N. York; Providence Journal, Providence, R. I.; Atlas, Boston; Philadelpia Enquirer, Philadelphia; will publish the above notice 6 times, send a copy of the paper to the Office in Charleston, S. C., and a certified copy of their account for payment

Jan. 12 fmw6

NEW ARRANGEMENT.

ROPES FOR INCLINED PLANES OF RAILROADS.

WE the subscribers have formed a co-partnership under the style and firm of Folger & Coleman, for the manufacturing and selling of Ropes for inclined planes of railroads, and for other uses, offer to supply ropes for inclined planes, of any length required without splice, at short notice, the manufacturing of cordage, heretofore carried on by S. S. Durfee & Co., will be done by the new firm, the same superintendent and machinery are employed by the new firm that were employed by S. S. Durfee & Co. All orders will be properly attended to, and ropes will be shipped to any port in the United States.

12th month 12th, 1836. Hudson, Columbia County, State of New-York.

ROBT. C. FOLGER.
33—tf GEORGE COLEMAN.

AMES' CELEBRATED SHOVELS, SPADES, &c.

300 dozens Ames' superior back-strap shovels.
150 do. do. do. plain do.
150 do. do. do. caststeel Shovels & Spades
150 do. do. Gold-mining Shovels.
00 do. do. plated Spades.
50 do. do. socket Shovels and Spades

Together with Pick Axes, Churn Drills, and Crow Bars (steel pointed), manufactured from Salisbury refined iron—for sale by the manufacturing agents,

WITHERELL, AMES & CO.,
No. 2 Liberty street, New-York.
BACKUS, AMES & CO.
No. 8 State-street, Albany.

N. B.—Also furnished to order, Shapes of every description, made from Salisbury refined Iron. v4-tf

MACHINE WORKS OF ROGERS, KETCHUM AND GROSVENOR, Paterson, New-Jersey.

The undersigned receive orders for the following articles, manufactured by them, of the most superior description in every particular. Their works being extensive, and the number of hands employed being large, they are enabled to execute both large and small orders with promptness and dispatch.

RAILROAD WORK.

Locomotive Steam-Engines and Tenders; Driving and other Locomotive Wheels, Axles Springs and Flange Tires; Car Wheels of cast iron, from a variety of patterns, and Chills; Car Wheels of cast iron, with wrought Tires; Axles of best American refined iron; Springs; Boxes and Bolts for Cars.

COTTON, WOOL, & FLAX MACHINERY,

Of all descriptions and of the most improved patterns, Style, and Workmanship.

Mill Geering and Millwright work generally; Hydraulic and other Presses; Press Screws; Calenders; Lathes and Tools of all kinds; Iron and Brass Castings of all descriptions.

ROGERS, KETCHUM & GROSVENOR,
Paterson, N. J. or 60 Wall-st. New-York
51tf

FRAME BRIDGES.

THE undersigned, General Agent of Col. S. H. LONG, to build Bridges, or vend the right to others to build on his Patent Plan, would respectfully inform Railroad and Bridge Corporations, that he is prepared to make cohtracts to build, and furnish all materials for superstructures of the kind, in any part of the United States, (Maryland excepted.)

Bridges on the above plan are to be seen at the following localities, viz. On the main road leading from Baltimore to Washington; two miles from the former place. Across the Motawamkeag river on the Military road in Maine. On the national road in Illinois, at sundry points. On the Baltimore and Susquehanna Railroad at three points. On the Hudson and Paterson Railroad in two places. On the Boston and Worcester Railroad, at several points. On the Boston and Providence Railroad, at sundry points. Across the Contoocook river at Hennikar, N. H. Across the Souhegan river, at Milford, N. H. Across the Connecticut river, at Hancock, N. H. Across the Androscoggin river, at Turner Centre, Maine. Across the Kennebec river, at Waterville, Maine. Across the Genesee river, at Squakiehill, Mount Morris, N. Y. Across the White River, at Hartford, Vt. Across the Connecticut River at Lebanon, N. H. Across the mouth of the Broken Straw Creek, Penn. Across the mouth of the Cataraugus Creek, N. Y. A Railroad Bridge diagonally across the Erie Canal, in the City of Rochester, N. Y. A Railroad Bridge at Upper Still Water, Orono, Maine. This Bridge is 500 feet in length; one of the spans is over 200 feet. It is probably the *firmest wooden bridge* ever built in America.

Notwithstanding his preseet engagements to build between twenty and thirty Railroad Bridges, and several common bridges, several of which are now in progress of construction, the subscriber will promptly attend to business of the kind to much greater extent and on liberal terms.

MOSES LONG.
Rochester, Jan. 19th, 1837. 4—y

STEPHENSON,

Builder of a superior style of Passenger Cars for Railroads,

No. 264 Elizabeth street, near Bleecker street,
NEW-YORK.

RAILROAD COMPANIES would do well to examine these Cars; a specimen of which may be seen on the New-York and Harlaem Railroad, now in operation.

ROACH & WARNER,

Manufacturers of OPTICAL, MATHEMATICAL AND PHILOSOPHICAL INSTRUMENTS, 293 Broadway, New-York, will keep constantly on hand a large and general assortment of Instruments in their line.

Wholesale Dealers and Country Merchants supplied with SURVEYING COMPASSES, BAROMETERS, THERMOMETERS, &c. &c. of their own manufacture, warranted accurate, and at lower prices than can be had at any other establishment.

☞ Istruments made to order and repaired.
1y—14

RAILWAY IRON, LOCOMOTIVES, &c. &c.

THE subscribers offer the following articles for sale:—

Railway Iron, flat bars, with countersunk holes and mitred joints, lbs

350 tons	2by	, 15 ft in length, weighing	4	68 per
280	"	2 " ¼, "	"	"	3 50	"
70	"	1½ " ½, "	"	"	2¼	"
80	"	1½ " ¼, "	"	"	1 25	"
90	"	1 " ¼, "	"	"	⅞	"

witn Spikes and Splicing Plates adapted thereto To be sold free of duty to State governments, or incorporated companies.

Orders for Pennsylvania Boiler Iron executed.

Rail Road Car and Locomotive Engine Tires, wrought and turned or unturned, ready to be fitted on the wheels, viz. 30, 33, 36, 42, 44, 54, and 60 inches diameter.

E. V. Patent Chain Cable Bolts for Railway Car axles, in lengths of 12 feet 6 inches, to 13 feet 2½, 2⅝, 3, 3⅜, 3¼, 3½, and 3⅝ inches diameter.

Chains for Inclined Planes, short and stay links, manufactured from the E. V. Cable Bolts, and proved at the greatest strain.

India Rubber Rope for Inclined Planes, made from New Zealand Wax.

Also, Patent Hemp Cordage for Inclined Planes, and Canal Towing Lines.

Patent Felt for placing between the iron chair and stone block of Edge Railways.

Every description of Railway Iron, as well as Locomotive Engines, imported at the shortest notice, by the agency of one of onr partners, who resides in England for this purpose.

A highly respectable American Engineer resides in England for the purpose of inspecting all Locomotives, Machinery, Railway Iron, &c. ordered through us.

A. & G. RALSTEN & CO.,
28 tf Philadelphia, No. 4 South Front-st.

ARCHIMEDES WORKS.

(100 North Moore-street, N.Y.)

THE undersigned beg leave to inform the proprietors of Rail Roads, that they are prepared to furnish all kinds of Machinery for Rail Roads, Locomotive Engines of any size, Car Wheels, such as are now in successful operation on the Camden and Amboy Rail Road, none of which have failed.—Castings of all kinds, Wheels, Axles and Boxes, furnished at the shortest notice.

H. R. DUNHAM & CO.
NEW YORK, February 12th, 1836. 4—ytf

PATENT RAILROAD, SHIP AND BOAT SPIKES.

⁂ The Troy Iron and Nail Factory keeps constantly for sale a very extensive assortment of Wrought Spikes and Nails, from 3 to 10 inches manufactured by the subscriber's Patent Machinery, which after five years successful operation, and now almost universal use in the United States, (as well as England, where the subscriber obtained a patent) are found superior to any yet ever offered in market.

Railroad companies may be supplied with Spikes having countersink heads suitable to the holes in iron rails, to any amount and on short notice. Almost all the Railroads now in progress in the United States are fastened with Spikes made at the above-named factory—for which purpose they are found invaluable, as their adhesion is more than double any common Spikes made by the hammer.

⁂ All orders directed to the Agent, Troy, N.Y. will be punctually attended to.

HENRY BURDEN, Agent.
Troy, N.Y., July, 1831.

⁂ Spikes are kept for sale, at factory prices, by I & J. Townsend, Albany, and the principal Iron Merchants in Albany and Troy; J. I. Brower, 222 Water-street, New-York; A. M. Jones, Philadelphia; T. Janviers, Baltimore; Degrand & Smith, Boston.

P. S.—Railroad companies would do well to forward their orders as early as practicable, as the subscriber is desirous of extending the manufacturing so as to keep pace with the daily increasing demand for his Spikes.

1J23am H. BURDEN.

G. Mitchell, Printer, 285 Bowery, N.Y.